

Application No. 10/675,118
Amendment dated April 10, 2006
Reply to Office Action of February 9, 2006

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Original) A composite collapse resistant riser comprising:
a metal liner;
a reinforcing layer adjacent the outside of said liner;
a shear ply layer over said reinforcing layer; and
an outer main structural layer of composite material over said shear ply layer.
2. (Previously Presented) A riser of claim 1 wherein said reinforcing layer is selected from the group consisting of dry fiber laminates, composite materials and combinations thereof.
3. (Original) A riser of claim 1 further comprising:
a performance enhancement layer on the inside of said liner.
4. (Original) A riser of claim 1 further comprising:
a fluid impermeable layer over said outer main layer of composite material.
5. (Previously Presented) A riser of claim 4 further comprising:
a scuff absorbing layer over said fluid impermeable layer.
6. (Original) A riser of claim 1 wherein said liner is selected from the group consisting of steel, aluminum and titanium.
7. (Original) A riser of claim 1 wherein said liner has at least one engaging surface on its outer surface.

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8. (Previously Presented) A riser of claim 6 further comprising a performance enhancement layer on the inside surface of said liner.

9. (Original) A riser of claim 5 wherein said scuff absorbing layer is of composite material.

10. (Original) A composite collapse resistant riser comprising:
a riser core having a metal liner having a first end and a second end and metal composite interfaces positioned adjacent said first and second ends of said liner;
a reinforcing layer selected from the group consisting of dry fiber laminates, composite laminates and combinations thereof adjacent the outside of said liner;
a shear ply layer over said reinforcing layer; and
an outer main structural layer of composite material over at least a portion of said riser core and connected to each of said metal composite interfaces.

11. (Original) A riser of claim 10 further comprising:
a performance enhancement layer on the inside of said liner.

12. (Original) A riser of claim 10 further comprising:
a fluid impermeable layer over said outer main layer of composite material.

13. (Original) A riser of claim 12 further comprising:
a scuff absorbing layer over said fluid impermeable layer.

14. (Original) A riser of claim 11 wherein said metal liner is selected from the group consisting of titanium, aluminum and steel.

15. (Original) A riser of claim 13 wherein said metal liner is selected from the group consisting of titanium, aluminum and steel.

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16. (Original) A riser of claim 10 wherein said metal liner has at least one engaging surface on its outer surface.

17. (Original) A riser of claim 13 wherein said metal liner has at least one engaging surface on its outer surface.

18. (Previously Presented) A riser of claim 10 further comprising at least one transition ring interposed between at least one end of said metal liner and at least one of said metal composite interfaces.

19. (Original) A riser of claim 10 wherein said shear ply has a sealing section.

20. (Original) A riser of claim 13 wherein said shear ply has a sealing section.

21. (Currently Amended) A riser of claim 19 wherein said sealing section is a pressure activated sealing section that is generally Y-shaped, and in which a first arm of said Y-shape is movable in response to pressure and which has a first position when not responding to pressure and a second position entered into in response to pressure in [[portion]] which it is received in a groove of said metal composite interface thereby providing a seal.

22. (Original) A composite collapse resistant liner comprising:
a metal liner having a first end and second end;
a metal composite interface having one or more trap locks positioned at each end of said metal liner;
a reinforcing layer adjacent the outside of said liner;
a shear ply layer over said reinforcing layer; and
an outer main layer of composite material over said shear ply and engaging said trap locks.

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23. (Original) A riser of claim 22 further comprising:
a performance enhancement layer on the inside of said metal liner.
24. (Original) A riser of claim 22 further comprising:
a fluid impermeable layer over said outer main layer of composite material.
25. (Original) A riser of claim 24 further comprising:
a scuff absorbing layer over said fluid impermeable layer.
26. (Original) A riser of claim 23 further comprising:
a fluid impermeable layer over said outer main layer of composite material.
27. (Previously Presented) A riser of claim 7 wherein said engaging surface is comprised of one or more raised areas on said outer surface of said liner.
28. (Previously Presented) A riser of claim 7 wherein said engaging surface is comprised of one or more depressions on said outer surface of said liner.
29. (Previously Presented) A riser of claim 3 wherein said performance enhancing layer on the inside of said liner is selected from the group consisting of natural rubber, modified natural rubber, hydrogenated acrylonitrile butadiene rubber, and combinations thereof.
30. (Previously Presented) A riser of claim 3 wherein said performance enhancing layer on the inside of said liner is comprised of a polymeric material.
31. (Previously Presented) A riser of claim 3 wherein said performance enhancing layer on the inside of said liner is comprised of a corrosion resistant metal.
32. (Previously Presented) A riser of claim 11 wherein said performance enhancing layer on the inside of said liner is selected from the group consisting of natural

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rubber, modified natural rubber, hydrogenated acrylonitrile butadiene rubber, and combinations thereof.

33. (Previously Presented) A riser of claim 11 wherein said performance enhancing layer on the inside of said liner is comprised of a polymeric material.

34. (Previously Presented) A riser of claim 11 wherein said performance enhancing layer on the inside of said liner is comprised of a corrosion resistant metal.

35. (Previously Presented) A riser of claim 23 wherein said performance enhancing layer on the inside of said metal liner is selected from the group consisting of natural rubber, modified natural rubber, hydrogenated acrylonitrile butadiene rubber, and combinations thereof.

36. (Previously Presented) A riser of claim 23 wherein said performance enhancing layer on the inside of said metal liner is comprised of a polymeric material.

37. (Previously Presented) A riser of claim 23 wherein said performance enhancing layer on the inside of said metal liner is comprised of a corrosion resistant metal.

38. (Previously Presented) A riser of claim 1 wherein said reinforcing layer is constructed so as to provide sufficient hoop strength to avoid collapse from the ambient pressure encountered in use.

39. (Previously Presented) A riser of claim 10 wherein said reinforcing layer is constructed so as to provide sufficient hoop strength to avoid collapse from the ambient pressure encountered in use.

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40. (Previously Presented) A riser of claim 22 wherein said reinforcing layer is constructed so as to provide sufficient hoop strength to avoid collapse from the ambient pressure encountered in use.

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